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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,832	10/11/2006	Takaharu Tanaka	P30819	5260
52123 7590 10/01/2008 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191				
EXAMINER HOANG, PHI				
ART UNIT 2628		PAPER NUMBER		
NOTIFICATION DATE 10/01/2008		DELIVERY MODE ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

# Office Action Summary

**Application No.**

10/599,832

**Applicant(s)**

TANAKA ET AL.

**Examiner**

PHI HOANG

**Art Unit**

2628

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 October 2006.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-26 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 11 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SF 100)  
Paper No(s)/Mail Date 11 January 2007  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 13, 14, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al. (US 6,075,899).
3. Regarding claim 13, Yoshioka discloses an information processing device comprising: a DRAM having a burst mode which burst-transfers data of successive column addresses; (Column 8, lines 5-27)

one or more data processing units operable to issue an access request; (Column 14, lines 20-27)

and an address conversion unit operable to convert access addresses which are included in the access request issued from said one or more data processing units, (Column 3, lines 29-35)

wherein at least one of said one or more data processing units is operable to access an  $M \times N$  rectangular area, where  $M$  and  $N$  are integers, (Column 7, lines 38-43)

said address conversion unit is operable to convert access addresses so that a column address of data at the  $(K+m)$ th column, where  $K$  and  $m$  are integers and  $m \leq M$ , of an  $L$ th line, and a column address of data at a  $K$ th column of an  $(L+n)$ th line, where  $L$

and  $n$  are integers and  $n \leq N$  become successive, (Column 3, lines 29-35, burst length defines how many columns are read)

and some or all areas of said DRAM is a frame memory which stores image data, the rectangular area is  $M$  pixels  $\times$   $N$  lines in the image data, and said data processing units are operable to perform one of motion compensation and motion estimation, where  $n=2n'$  and  $n'$  is an integer (Column 7, lines 16-21).

It is obvious to a person of ordinary skill in the art that the values of  $M$ ,  $N$ ,  $m$  and  $n$  are integers because row and columns of an image are known to be measured in integer values. Furthermore, it is obvious that  $m$  and  $n$  are less than or equal to  $M$  and  $N$ , respectively because the values can not exceed the actual rectangular area

4. Regarding claim 14, Yoshioka discloses one of said data processing units is operable to access the image data on a line basis, and to continuously read out data of all  $2n$  lines (Column 14, lines 17-27, processor reads from a first in, first out memory).

5. Regarding claim 23, Yoshioka discloses a data access method for accessing a rectangular area made up of  $M$  pixels  $\times$   $N$  lines in image data from a DRAM, the DRAM having a burst mode which burst-transfers data of continuous column addresses, and storing the image data, said data access method comprising: (Column 7, lines 38-43 and column 8, lines 5-27)

an input step of inputting an access request for the rectangular area; (Column 14, lines 17-43)

and an address converting step of converting access addresses included in an access request issued in said access step, (Column 3, lines 29-35)

wherein in said address converting step, addresses are converted so that a column address of data at the  $(K+m)$ th column, where  $K$  and  $m$  are integers and  $m \leq M$ , of the  $L$ th line, and a column address of the data at the  $K$ th column of the  $(L+n)$  line, where  $L$  and  $n$  are integers and  $n \leq N$ , become successive, (Column 3, lines 29-35, burst length defines how many columns are read)

and some or all areas of said DRAM being a frame memory which stores image data and the rectangular area being  $M$  pixels  $\times$   $N$  lines in the image data, where  $M$  and  $N$  are integers, and a data processing unit performing motion compensation and motion estimation, where  $n=2n'$  ( $n'$  is an integer) (Column 7, lines 16-21).

It is obvious to a person of ordinary skill in the art that the values of  $M$ ,  $N$ ,  $m$  and  $n$  are integers because row and columns of pixels can not be a fractional value. Furthermore, it is obvious that  $m$  and  $n$  are less than or equal to  $M$  and  $N$ , respectively because the values can not exceed the actual rectangular area

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al. (US 6,075,899) in view of Mitsuishi (US 6,745,320 B1).

7. Regarding claim 15, Yoshioka discloses said data processing unit is operable to decode an inputted stream on a basis of two or more macroblocks, by motion compensation, said DRAM is operable to store the image data decoded by said data

processing unit, and said data processing unit is operable to access the image data stored in said DRAM as reference data. (Column 1, line 50 – column 2, line 36)

Yoshioka does not clearly disclose said information processing device further comprises: a memory featuring a smaller storage capacity and a faster access speed than said DRAM; a data transfer unit operable to transfer the data from said DRAM to said memory.

However, it is well known in the art that processors have small, fast memory called registers built in for quick access to data from memory (RAM) for processing. Mitsubishi discloses a general purpose processor with registers available for high speed processing (Column 12, lines 6-18).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Yoshioka to utilize smaller, faster memory for processing as disclosed by Mitsubishi because processing of data can be performed more quickly.

8. Claims 16-22 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshioka et al. (US 6,075,899) in view of Mitsubishi (US 6,745,320 B1) and further in view of Callway et al. (US 6,807,311 B1).

9. Regarding claim 16, Yoshioka in view of Mitsubishi discloses all limitations discussed in claim 15.

Yoshioka (Column 14, lines 17-27, accessing data from memory) in view of Mitsubishi (Column 12, lines 6-18, transferring data to other faster memory) further

disclose said data transfer unit is operable to transfer data on a transfer region basis from said DRAM to said memory, based on the access request from said data processing unit.

Yoshioka in view of Mitsuishi does not disclose the image data stored in said DRAM is split into transfer regions larger in size than the rectangular area.

Callway discloses the image data stored in said DRAM is split into transfer regions larger in size than the rectangular area (Column 12, lines 42-58).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Yoshioka in view of Mitsuishi to segment regions of an image for transfer because bandwidth usage is reduced by only retrieving the regions that are necessary.

10. Regarding claim 17, Yoshioka in view of Mitsuishi discloses all limitations discussed in claim 15.

Yoshioka in view of Mitsuishi does not disclose said data transfer unit is operable to transfer a minimum area which surrounds plural rectangular areas as a transfer region as data from said DRAM to said memory, based on an access request from said data processing unit.

Callway discloses said data transfer unit is operable to transfer a minimum area which surrounds plural rectangular areas as a transfer region as data from said DRAM to said memory, based on an access request from said data processing unit (Column 12, lines 42-58, area is fixed).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Yoshioka in view of Mitsubishi to transfer a fixed area because bandwidth usage can be reduced by using an optimal size for each transfer.

11. Regarding claim 18, Yoshioka in view of Mitsubishi and further in view of Callway (Column 12, lines 42-58, since the area for transfer is a fixed size the value of the fixed sized is inherently stored in a memory) discloses said data transfer unit includes a register which holds a size of the transfer region.

12. Regarding claim 19, Yoshioka (Column 14, lines 17-27, the processor accesses the image in memory once) in view of Mitsubishi (Column 12, lines 6-18, discloses transferring from RAM to registers) and further in view of Callway discloses said data transfer unit is operable to transfer the data from said DRAM to said memory when a predetermined number  $n1$  of access requests are outputted from said data processing unit.

13. Regarding claim 20, Yoshioka (Column 14, lines 17-27, the processor accesses the image in memory once) in view of Mitsubishi and further in view of Callway (Column 12, lines 42-58, since the area for transfer is a fixed size the value of the fixed sized is inherently stored in a memory) discloses said data transfer unit includes a register which holds the size of the transfer region and the number  $n1$ .

14. Regarding claim 21, Yoshioka in view of Mitsubishi and further in view of Callway (Column 12, lines 42-58, since the transfer unit is transferring all rectangular areas,



there is no regard to whether it is adjacent or overlapping) discloses said data transfer unit is operable to transfer the transfer region which includes all rectangular areas, from said DRAM to said memory when access requests from said data processing unit request the rectangular areas which are adjacent or overlapping.

15. Regarding claim 22, Yoshioka (Column 3, lines 53-67 and column 9, line 13 – column 14, line 7, half-pel interpolation is performed (motion vector estimation) on an image and then decoded) in view of Mitsubishi and further in view of Callway discloses a motion vector estimation unit operable to estimate plural motion vectors corresponding to plural macroblocks from the inputted stream; and a decoding unit operable to decode the inputted stream on a macroblock basis, and to store a decoding result into said DRAM, wherein a decoding sequence of the macroblocks is changed based on the plural motion vectors so that addresses for accessing said DRAM become successive.

16. Regarding claim 24, Yoshioka (Column 14, lines 17-27, the processor accesses the image in memory once) in view of Mitsubishi (Column 12, lines 6-18, discloses transferring from RAM to registers) and further in view of Callway discloses said data transfer unit is operable to transfer the data from said DRAM to said memory when a predetermined number  $n_1$  of access requests are outputted from said data processing unit.

17. Regarding claim 25, Yoshioka (Column 14, lines 17-27, the processor accesses the image in memory once) in view of Mitsubishi and further in view of Callway (Column 12, lines 42-58, since the area for transfer is a fixed size the value of the fixed sized is

inherently stored in a memory) discloses said data transfer unit includes a register which holds the size of the transfer region and the number  $n1$ .

18. Regarding claim 26, Yoshioka in view of Mitsuishi and further in view of Callway (Column 12, lines 42-58, since the transfer unit is transferring all rectangular areas, there is no regard to whether it is adjacent or overlapping) discloses said data transfer unit is operable to transfer the transfer region which includes all rectangular areas, from said DRAM to said memory when access requests from said data processing unit request the rectangular areas which are adjacent or overlapping.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHI HOANG whose telephone number is (571)270-3417. The examiner can normally be reached on Mon-Fri, 8:30am-5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on 571-272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Phi Hoang/  
Examiner, Art Unit 2628  
September 23, 2008

/XIAO M. WU/  
Supervisory Patent Examiner, Art Unit 2628